

WHAT IS CLAIMED IS:

Sub
a1

1. A method for comparing and matching a first set of digital data to at least a second set of digital data, comprising:
- 5 raster transforming at least one of the first set of digital data and the second set of digital data; and
- statistically comparing and matching the raster transformed sets of digital data to appropriately corresponding portions of each other.

Sub
a1

10

2. The method of claim 1, further comprising analyzing the statistical comparisons and generating new transformations for matching the sets of data.

15

3. The method of claim 1, further comprising statistically comparing the raster transformed sets of digital data until a match or non-match between the first and second sets of data is achieved.

20

4. The method of claim 1, wherein the raster transforming comprises raster transforming at least one of the first or the second set of digital data and computing statistics on the transformation.

5. The method of claim 4, wherein statistically comparing and matching comprises analyzing the computed statistics of the transformation and calculating new and different transformations on the digital data.

25

Sub
a2

6. A method for comparing and matching a first set of digital data to at least a second set of digital data, comprising:
- loading at least one of the first and second sets of digital data into a first memory device;

— rendering model transformations and accumulating statistics of the loaded digital data;

- adjusting the models based on the accumulated statistics; and statistically comparing and matching the model transformations of the loaded set of digital data to appropriately corresponding portions of the other set of digital data.
- 5.

7. The method of claim 6, further comprising statistically comparing the sets of digital data until a match or non-match between the first and second sets of data is achieved.

8. The method of claim 6, wherein adjusting the models comprises analyzing the statistical comparisons and generating new transformations for matching the sets of data.

9. A system for tracking digital templates of a digital scene defined by plural images, comprising:

a raster processor that transforms at least one of the templates; and

a compare processor that simultaneously and statistically compares and matches images associated with the templates for tracking the templates.

10. The system for tracking digital templates of claim 9, wherein the compare processor comprises an address generator that generates addresses for the template and the image that are to be compared.

11. The system for tracking digital templates of claim 9, wherein

the addresses reflect transformations, including combinations of rotations, scales and perspective transforms of the template or image.

5 12. The system for tracking digital templates of claim 9, wherein the addresses serve as input to filtering functions that read from the images to be compared and generate color values.

10 13. The system for tracking digital templates of claim 9, wherein the template comprises a group of pixels of the image and wherein the compare processor comprises an acceptance tester preprogrammed to decide whether to allow a pixel of the template to contribute to the statistics.

15 14. The system for tracking digital templates of claim 13, wherein If the pixel is permitted to contribute, the color values are sent to a statistics/comparison device for statistical analyses and comparison processing.

20 15. The system for tracking digital templates of claim 14, wherein the statistics/comparison device contains variables that are updated for each pixel based on the input color values.

25 16. The system for tracking digital templates of claim 15, wherein the statistical analyses compares and matches the template to the image by initially defining a function that estimates the similarity between the template and the image.

17. The system for tracking digital templates of claim 16, wherein

CI
ca
the template is located in the image by computing the function at various locations in the image and determining where the function is maximized.

5 Jul AS } 18. The system for tracking digital templates of claim 9, wherein the compare processor comprises an alpha blending device that allows use of an additional color component that corresponds to the opacity of a surface for controlling the amount of color of a pixel in the source surface to be blended with a pixel in the destination surface.

10 19. The system for tracking digital templates of claim 9, wherein the raster processor renders the template at a plurality of offsets for allowing the raster processor to at least one of determining a desired position for the template and accumulate information to analytically compute a desired update.

15 20. The system for tracking digital templates of claim 19, wherein the offsets are fractional perturbations to vertices of the templates.

20